S/056/62/042/002/041/055
B108/B104

AUTHORS: Mattkhiz, Z., Neudachin, V. G., Smirnov, Yu. F.

TITLE: Single-particle levels in O^{17} and F^{17} nuclei with assumed strong coupling of nucleon and core with tetrahedral symmetry

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 592 - 596

TEXT: In order to find additional evidence for the nuclear α-model the authors calculated the low-energy levels of O^{17} and F^{17} considering strong coupling between the outer nucleon and the tetrahedral core. This symmetry allows also rotational levels with small nuclear spin and negative parity. In fact, such states have been observed in experiments. A nonspherical potential similar to the Nilsson potential is used in the Hamiltonian of the internal motion: $V = (m\omega^2(\delta)r^2/2)\left[1 - \delta \frac{i}{\sqrt{2}}(Y_{3,-2} - Y_{3,2})\right]$. This potential V is invariant with respect to transformations of the group T_d (symmetry A_1). For this reason the wave functions of the states of the

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MATTKHIZ. Z.; NEUDACHIN, V.G.; SMIRNOV, Yu.F.

Amplification of E2 and E3 transitions in the nuclear p-shell as a indication of the spatial isolation of α-associations.

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.

SMIRNOV, Yu.F.; SHITIKOVA, K.V.

Genealogical coefficients in the translational-invariant shell model. Izv. AN SSSR. Ser. fiz. 27 no.11:1442-1450 N '63.
(MIRA 16:11)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.

L 16899-63   EPF(n)-2/EWT(m)/BDS   AFFTC/ASD/SSD   Pu-4

ACCESSION NR: AP3005254   S/0056/63/045/002/0107/0115
                                                      6.1
                                                      60
AUTHOR: Mattkhiz, Z.; Neudachin, V. G.; Smirnov, Yu. F.

TITLE: Determination of the mutual arrangement of nucleon clusters in a nucleus
with the aid of the directed orbital method   19

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 107-115

TOPIC TAGS: alpha cluster, shell model, resonant group model, alpha particle
model, directed orbital method

ABSTRACT: Some general rules, which can be used to determine the geometric ar-
rangement of alpha-clusters in a nucleus from a given Nilsson orbit series or shell
configuration, are derived from a modified version of the directed orbital method
of quantum chemistry. The study is evoked by the limitations of the previously
employed alpha-particle model and of the later Wheeler resonant-group model which
in turn has developed into the cluster model, particularly for given states of
nuclei with a Young tableau [44...4], which have not been discussed in general form
to date. The analysis is limited to light nuclei, and some excited states of O-16
and C-12, as well as the geometric arrangement of alpha-clusters in Ca-40, are

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L 16899-63

ACCESSION NR: AP3005254

discussed by way of examples. Some complications arising in the alpha-model in-
terpretation of light nuclei are discussed. Orig. art. has 3 formulas and 1
figure.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennog universiteta
(Nuclear Phys. Inst. Moscow State University)

SUBMITTED: 26Jul62   DATE ACQ: 06Sep63   ENCL: 00

SUB CODE: PH   NO REF SOV: 009   OTHER: 034

Card 2/2

......., L.; NEUDACHIN, V. G.; SMIRNOV, Yu. F.

"Maximal Values of Derived Alpha Widths for Nuclear States with Large Spins."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

MGU (Moscow State Univ)

BEREGI, P.; NEUDACHIN, V. G.; SMIRNOV, Yu. F.

"Surface interference in direct reaction of nucleon cluster substitution."

report submitted for Intl Conf on Low & Medium Energies Nuclear Physics, Paris, 2-8 Jul 64

Moscow State Univ. & Inst Theor. Physics, Copenhagen

... ...A, N. S.; SMIRNOV, Yu. F.; YUDIN, N. P.

"The Stopping Absorption of π^- Mesons in C^{12}."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

MGU (Moscow State Univ)

, Yu. A.; MATTKHIZ, Z.; NEUDACHIN, V. G.; SMIRNOV, Yu. F.

Determination of the Degree of Isolation of Alpha Clusters in Nuclei of the p-shell by E_λ Transitions."

"Inelastic Scattering of Electrons on Be^9 in the Nucleon Cluster Model."

reports submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

Moscow State Univ.

SVIRIDOV, D.T.; SMIRNOV, Yu.F.; TROITSKIY, V.Ye.

Problem of d^N electron configurations in a crystal field. Configuration d^2 and d^8 in a cubic field. Kristallografiia 9 no.6:807-815 N-D '64.

(MIRA 18:2)

1. Institut kristallografii AN SSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

S/0048/64/028/002/0326/0336

ACCESSION NR: AP4024059

AUTHOR: Neudachin, V.G.; Orlin, V.N.; Smirnov, Yu.F.

TITLE: Monopole part of the Majorana forces and nucleon quadrupling in light nuclei /Report, Thirteenth Annual Conference on Nuclear Spectroscopy held in Kiev 25 Jan to 2 Feb 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.2, 1964, 326–336

TOPIC TAGS: nucleon quadrupling, α cluster, shell model, Majorana forces, Majorana monopole, light nucleus, nucleon coupling, α decay energy, polonium

ABSTRACT: It is known (J.M.Blatt and V.Weisskopf, Theoretical Nuclear Physics,N.Y. 1952; J.P.Elliott and A.M.Lane, Handbuch der Physik,39,1957) that in light nuclei Majorana forces are largely responsible for the specific effect of quadrupling or α-clustering, i.e., the following effects: "sawtooth" variation of the nucleon coupling energy as a function of A, exceptionally high location of the lowest level with T = 1 in nuclei with N = Z = 2m, persistence of LS coupling with N = Z = 2m, a relatively low α-particle detachment energy, etc. Interpretation of these phenomena from the standpoint of the α-particle model proved to be unsatisfactory, for, as analysis

Card 1/3

ACCESSION NR: AP4024059

of the experimental data shows, the overlapping of the α-clusters is very signifi-
cant. As a result the level diagrams of light nuclei are not correctly described by
the α-particle model, but, on the other hand, the spectra of p shell nuclei, for
example, are satisfactorily described by the shell model. Hence it is more logical
to analyze quadrupling in the framework of the shell model, wherein the effect is
associated with the Young diagram [f] of the orbital part of the wave function.
Such an analysis has been carried out by J.P.Elliott and A.M.Lane (Handbuch der
Physik 39,1957). In the present paper the role end significance of Majorana forces
are discussed and analyzed. More specifically, there is considered the Majorana
monopole M(0) which, as analysis of the experimental data shows, is the principal
"carrier" of quadrupling in light nuclei, i.e., responsible for the effect that the
more symmetrical [f], the higher the coupling energy. The energy role of quadrupling
factors, i.e., the Majorana molopole M(0), is particularly great in p shell nuclei
and decreases in going to heavier nuclei. This is connected with increase of both
the principal quantum number N_O and the length parameter of the oscillator well.
Among the factors discussed is the influence of M(0) forces on the positions of le-
vels with T = 1 and the relation between the energy effects of quadrupling and re-
duced α widths. Consideration is also given to the effect of the forces and cluster-
ing in Po isotopes. In conclusion, it is noted that the inference that nucleon

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ACCESSION NR: AP4024059

quadrupling in light nuclei is due to $M(0)$ forces was formulated briefly in a re-
view by two of the authors (V.N.Orlin and Yu.F.Smirnov) in collaboration with V.V.
Balashov and I.B.Teplov, devoted to the structure of light nuclei and presented at
the Twelfth All-Union Conference on Nuclear Spectroscopy held in Leningrad in Janu-
ary 1962. "The authors are grateful to L.A.Pokrovskii for carrying out a number of
the calculations and to S.S.Vasil'yev and I.B.Teplov for assistance in carrying out
the work." Orig.art.has: 33 groups of formulas and 2 figures.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: NS

DATE ACQ: 08Apr64

NR REF SOV: 004

ENCL: 00

OTHER: 021

Card 3/3

ACCESSION NR: AP4042968   S/0048/64/028/007/1220/1228

AUTHOR: Zelenskaya, N.S.; Smirnov, Yu.F.

TITLE: Concerning some features of the quasielastic nucleon and deuteron knock-out reactions on 1d-2s shell nuclei /Report, 14th Annual Conference on Nuclear Spectroscopy held in Tibilisi 14-21 Feb 1964/

SOURCE: AN SSSR, Izv. Seriya fizicheskaya, v.28, no.7, 1964, 1220-1228

TOPIC TAGS: nuclear reaction, proton reaction

ABSTRACT: In order to obtain information concerning direct knoc-out reactions of, 1d-2s shell nuclei between O^{16} and Ca^{40}, the cross sections for the following reactions were calculated: $Mg^{24}(p,2p)Na^{23}$, $Si^{28}(p,2p)Al^{27}$ and $Mg^{24}(p,pd)Na^{22}$. The calculations were performed with the unified model in the momentum approximation with the use of plane waves. The reduced nucleon widths were taken from the work of S. Yoshida (Prog.Theoret.Phys.12,141,1954). The results are presented graphically and are discussed. As a function of incident proton energy, the cross section for the (p,2p) reaction shows a number of well separated maxima. These are due primarily to the difference between the longitudinal and transverse frequencies in these deform-

1/3

ACCESSION NR: AP4042968

the unstable Be^6 nucleus might be investigated by means of the $Be^7(p,pn)Be^6$ reaction. "In conclusion, the authors consider it their pleasant duty to express their gratitude to V.G.Neudachin for discussing the work and for valuable advice."

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Scientific Research Institute of Nuclear Physics, Moscow State University)

SUBMITTED: 00   ENCL: 00

SUB CODE: NP   NR REF SOV: 006   OTHER: 013

3/3

L 32827-65   EWP(e)/EWT(m)/EWP(t)/EWP(b)   DIAAP/IJP(c)   JD

ACCESSION NR: AP5004548   S/0048/65/029/001/0186/0190

AUTHOR: Zelenskaya, N.S.; Smirnov, Yu.F.; Yudin, N.P.

TITLE: The absorption of stopped π^- mesons by C^{12} nuclei /Report, 14th Annual Conference on Nuclear Physics held in Tbilisi 14-22 Feb 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.29, no.1, 1965, 186-190

TOPIC TAGS: meson capture, alpha particle, triton, neutron, boron, carbon, theoretical physics.

ABSTRACT: In this paper the authors interpret the experimental data of A.T.Varfolomeyev (Zhur.eksp.i teor.fiz.42,713,1962) concerning the $C^{12} + \pi^- \rightarrow 2\alpha + t + n$ reaction. Specifically, Varfolomeyev measured the excitation curve of B^{11} in this reaction, the energy spectra of the emitted α particles and tritons, and the t-n angular correlation. The B^{11} excitation curve had two maxima, one at 20 MeV and one at about 35 MeV. The 20 MeV maximum is due to ejection of a nucleon from the s shell. The 35 MeV maximum is ascribed to absorption of the π^- meson by an α-particle cluster in the C^{12} nucleus. The α-particle and triton energy spectra and the t-n angular correlation were calculated on the basis of the α-particle absorption

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L 32827-65

ACCESSION NR: AP5004548

4

mechanism, and the agreement obtained between theory and calculation was very good in the case of the angular correlation and "not bad" in the case of the energy spectra. The peaks in the energy spectra are due to $\alpha-\alpha$ and $\alpha-t$ interaction in the final state and are not specific for the α-particle absorption mechanism. It is concluded that π^- capture in C^{12} is due to single-nucleon and α-particle absorption. It is suggested that the α-particle absorption mechanism will also be important in π^- capture in O^{16}, but that in other nuclei, specifically in N^{14}, the two-nucleon absorption mechanism may predominate. "In conclusion, the authors consider it their pleasant duty to thank V.G. Neudachin and V.V. Balashov for valuable advice and discussions, and A.T. Varfolomeyev, who kindly permitted us to use his experimental results." Orig.art.has: 1 formula and 8 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosu-darstvennogo universiteta im.M.V. Lomonosova (Scientific Research Institute of Nuclear Physics, Moscow State University)

SUBMITTED: 00/--Jan65   ENCL: 00   SUB CODE: NP

NR REF SOV: 004   OTHER: 004

Card 2/2

L 13173-66   EWT(m)/EWA(h)

ACC NR: AP6001147   SOURCE CODE: UR/0367/65/002/003/0427/0432

AUTHOR: Zelenskaya, N. S.; Mayling, L.; Neudachin, V. G.; Smirnov, Yu. F.

ORG: Nuclear Physics Institute, Moscow State University (Institut yadernoy fiziki moskovskogo gosudarstvennogo universiteta)

TITLE: Selection rules for nuclear reactions involving nucleon associations in the SU(3) scheme

SOURCE: Yadernaya fizika, v. 2, no. 3, 1965, 427-432

TOPIC TAGS: nuclear reaction, nucleon interaction, selection rule, quantum number, radioactive decay scheme, alpha particle, alpha decay

ABSTRACT: The authors examine selection rules according to approximate models of quantum numbers in the SU(3) scheme. Selection rules are formulated for nuclear reactions involving associations according to quantum numbers in the SU(3) scheme, widely used in light nuclei spectroscopy. It is shown that these selection rules in some cases lead to very rigid restrictions, which makes it easy to check them experimentally. For example, the reaction of quasi-elastic knock-out of an Alpha-particle from the nucleus O^{16} by a fast particle $\underline{a}$: O^{16} ($\underline{a}$, $\underline{a}\alpha$)C^*, accompanied by α-decay of $C^{12}* \to 3\alpha$, is possible only through the ~ 12-MeV level $|1s^4 \, 1p^8 \, [444]4^+ >$ of the nucleus C^{12}. Furthermore, in the stripping reactions $O^{16}(Li^6, d)Ne^{20}*$ the only levels of the configuration $(1d-2s)^4$ which can be excited are those of the lowest rotational series 0^+, 2^+, ..., based on the ground state of Ne^{20}.

Card   1/2

L 13173-66
ACC NR: AP6001147

Orig. art. has: 6 formulas.

SUB CODE: 18/ SUBM DATE: 23Mar65/ ORIG REF: 004/ OTH REF: 010

Card 2/2

L 36826-66   EWT(1)/T   IJP(c)   GG

ACC NR: AP6018765   SOURCE CODE: UR/0070/66/011/003/0375/0380

39
B

AUTHOR: Sviridov, D. T.; Sviridova, R. K.; Smirnov, Yu. F.

ORG: Institute of Crystallography AN SSSR (Institut kristallograhii AN SSSR)

TITLE: Problems of the configurations of the d^N-electrons in a crystal field. Construction of the wave functions for complex configurations

SOURCE: Kristallografiya, v. 11, no. 3, 1966, 375-380

TOPIC TAGS: electron distribution, crystal chemistry, wave function

ABSTRACT: The article presents a method for calculating the one and two-part genealogical coefficients for cubic groups which is applicable to the analysis of multipart configurations in a strong cubic field; the properties of these quantities are discussed. The article gives complete tables of calculated values of these coefficients for groups 3/4, 3/4, and 6/4. The article starts with a discussion of the method of classification of the states of d-electrons in a cubic field. It then proceeds to calculation of the genealogical coefficients which are used in the construction of the wave functions, and then to calculation of the matrix elements of the mathematical operators. It concludes with

Card 1/2   UDC: 548.0:539.18

L 21554-66   EWT(m)/EWA(h)

ACC NR: AP6011497   SOURCE CODE: UR/0386/66/003/007/0298/0301

AUTHOR: Smirnov, Yu. F.; Neudachin, V. G.

ORG: Scientific Research Institute of Nuclear Physics of the Moscow State University im. M. V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of the electronic states of atoms, molecules, and solids by quasielastic knock-on of an electron by a fast electron (e, 2e)

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 7, 1966, 298-301

TOPIC TAGS: excited electron state, electron collision, hydrogen atom reaction, hydrogen ion, metal crystal, wave function, fast particle

ABSTRACT: Continuing earlier investigations (ZhETF v. 45, 131, 1963) of the analogs of direct nuclear reactions in the atomic-molecular region, the authors point out the great value of the quasielastic knock-on reaction (e, 2e). They show with three examples (in the impulse approximation) that this makes it possible to obtain the Fourier transform of the wave function of the knock-on electron and its binding energy. The cases considered are: (1) H_2 molecule, final ion H_2^+ in state $1\sigma_g$, (2) free electrons in a metal (plane waves), and (3) strong coupling with the

Card   1/2

ACC NR: AP6019613   *(A, N)*   SOURCE CODE: UR/0048/66/030/002/0235/0241

AUTHOR: Kudeyarov, Yu.A.; Neudachin, V.G.; Smirnov, Yu.F.

ORG: none

TITLE: Inelastic scattering of electrons on Be-9 and a comparison of different nuclear models /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya. v. 30, no. 2, 1966, 235-241

TOPIC TAGS: nuclear structure, beryllium, nuclear model, electron scattering, inelastic scattering, nucleon clustering interaction

ABSTRACT: The authors have been interested in a nucleon cluster model discussed by Y.C.Tang, K.Wildermuth, and L.D.Pearlstein (Nucl.Phys., 32, 504 (1962)) which contains a parameter x describing the overlap of the α-particle clusters which assumes the value unity in the limiting case of the shell model and assumes low values in the case of the α-particle model. Previously the authors and collaborators (Zh.eksperim. i teor. fiz., 45, 107 (1963); ibid., 49, 97 (1963); Izv. AN SSSR. Ser. fiz., 27,1273 (1963); Nucl. Phys. (1965) in press) have evaluated the parameter x for Be^9 from the value of the quadrupole moment, and for C^{12} and O^{16} from the E2 and E3 transition probabilities. In the present paper the authors calculate the form factor of Be^9 for inelastic scattering of electrons, employing the value of x previously obtained from

Card 1/2

ACC NR: AP6019619 (A, N) SOURCE CODE: UR/0048/66/030/002/0278/0284

AUTHOR: Zelenskaya, N.S.; Smirnov, Yu.F.

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im. M.V.Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: On taking into account spin-dependent effects in quasi-elastic knockout reactions /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 278-284

TOPIC TAGS: nuclear reaction, nuclear spin, spin orbit coupling, ~~knockout reaction~~, impulse approximation, spin-dependent forces

ABSTRACT: The impulse approximation calculations of V.V.Balashov, A.N.Boyarkina, and I.Rotter (Nucl. Phys., 59, 417 (1964)) and P.Beregi, N.S.Zelenskaya, V.G. Neudachin, and Yu.F.Smirnov (Nucl. Phys., 66, 513 (1965)) of the cross section of the quasi-elastic knockout reaction (a,aX) have been generalized to take into account the spin-dependent terms in the interaction between the incident particle a and the knocked out particle or cluster X. The tensor forces between a and X are neglected, but the central forces, the spin-orbital coupling, and the spin-spin

Card 1/2

L 41297-66   EWT(m)/EWP(t)/ETI   IJP(c)   JD/JH

ACC NR: AP6019620 (A,N) SOURCE CODE: UR/0048/66/030/002/0285/0291

AUTHOR: Zelenskaya, N.S.; Smirnov, Yu.F.

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im. M.V.Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Energy spectra of the final nuclei in (p,2p) reactions on 1d-2s shell nuclei /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 285-291

TOPIC TAGS: nuclear reaction, knockout reaction, Coriolis force, nuclear shell model, deformed nucleus, magnesium, aluminum, silicon, phosphorus

ABSTRACT: The authors have extended their earlier unified model calculations of quasi-elastic proton and deuteron knockout reactions on deformed 1d-2s shell nuclei (Izv. AN SSSR, 28, 1220 (1964)), to take into account the effect of rotational band mixing, i.e., of the coupling between the single-particle and rotational motions. The calculations were motivated by the appearance of the experimental excitation curves of G.Tibell, O.Sundberg, and R.U.Rendberg (Arkiv fys., 25, 443 (1964)) for the (p,2p) reactions on Mg^{24}, Al^{27}, Si^{28} and P^{31} which disagreed with the authors' earlier calculations in such a way as to suggest that rotational band mixing might be signi-

Card 1/2

Card 2/2

ACC NR: AP6019621   (A,N)   SOURCE CODE: UR/0048/66/030/002/0292/0300

AUTHOR: Kurdyumov, I.V.; El' Samarai, S.Kh.; Smirnov, Yu.F.; Shitikova, K.V.

ORG: none

TITLE: Dipole photoabsorption in Li-6 /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.30, no. 2, 1966, 292-300

TOPIC TAGS: nuclear reaction, nuclear structure, nuclear shell model, gamma ray absorption, lithium, nuclear energy level,

ABSTRACT: The authors have employed the translation invariant oscillator potential shell model of Yu.F.Smirnov and K.V.Shitikova (Izv. AN SSSR. Ser. Fiz., 27, 1442 (1963)) to calculate the dipole photoabsorption of Li^6 as well as the cross section for the $Li^6 (\gamma,n)Li^5$ reaction. Excitation probabilities in the $Li^6 (p,2p)He^6$ reaction of odd He^6 states analogous to the Li^6 states of interest in connection with the photo-absorption were also calculated by the method of V.V.Balashov and A.N.Boyarkina (Nucl, Phys. 38, 629 (1962)) and K.Dietrich (Phys. Lett., 2, 139 (1962)), and the energies of the Li^6 states were determined by comparing the He^6 calculations with experimental data. The photoabsorption calculations were effected by diagonalizing, together with the spin-orbital interaction, the matrix for the residual two-particle interactions,

Card 1/2

SVIRIDOV, D.T.; SMIRNOV, Yu.F.

Algebra of irreducible cubic tensors. Dokl. AN SSSR 163 no.5:1138-
1141   Ag '65.   (MIRA 18:8)

1. Institut kristallografii AN SSSR i Moskovskiy gosudarstvennyy
universitet. Submitted January 23, 1965.

ACC NR: AR7000902   SOURCE CODE: UR/0058/66/000/009/H062/H062

AUTHOR: Smirnov, Yu. G.

TITLE: Experimental investigation of the propagation of ultrasonic surface waves in piezoquartz plates

SOURCE: Ref. zh. Fizika, Abs. 9Zh448

REF SOURCE: Tr. Leningr. in-t'aviats. priborostr., vyp. 45, 1965, 10-16

TOPIC TAGS: ultrasonic wave, ultrasonic wave propagation, piezoquartz plate, surface ultrasonic wave, temperature coefficient, velocity temperature coefficient, ultrasonic energy flow direction, conversion coefficient

ABSTRACT: A description is given of the measurement of the propagational velocity and the velocity temperature coefficient of ultrasonic surface waves in a piezo-quartz plate of X-section. A block diagram is given of the unit using the pulse-phase method to investigate samples 4—5 times greater in thickness than the length of the surface wave. Measurements were made at frequencies of 5 and 10 Mc, with the velocity measured to an accuracy of 0.5—1%. Surface ultrasonic waver were

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ACC NR: AR7000902

induced either by pressing 0.1-mm-diameter wire electrodes to the piezoquartz plate or by using wedge-shaped converters. It is shown that the conversion coefficient is at a maximum when the electrode is orthogonal to the Y axis, and at a minimum (equal to zero) when the electrode is parallel to this axis. It was found that the velocity of ultrasonic waves fluctuates between $3.14 \cdot 10^5$ and $3.93 \cdot 10^5$ cm/sec, depending on the direction of propagation relative to the crystallographic axes of the piezoquartz plate. The temperature coefficient of velocity twice changes its sign with a change in wave direction, reaching a maximum value of $1.3 \cdot 10^{-4}$ degree^{-1} when the direction is —60° relative to the Y axis. The direction of the flow of ultrasonic energy is at an angle of 6—10° of the normal to the wave front. If the front of the wave is perpendicular to the Y axis, energy propagation is at an angle of 8° to this axis. Results are presented of a comparison of the propagation of surface monocrystal and an isotropic body. I. Kanevskiy. [Translation of abstract]   [SP]

SUB CODE: 20/

Card 2/2

L 10510-63
ACCESSION NR: AP3000196   S/0115/63/000/005/0044/0048

AUTHOR: Gertsenshteyn, M. Ye.; Lur'ye, Yu. A.; Smirnov, Yu. G.   45

TITLE: Measurement of sensitivity in regenerative circuits

SOURCE: Izmeritel'naya tekhnika, no. 5, 1963, 44-48

TOPIC TAGS: noise temperature, noise figure, receiver sensitivity, regenerative circuit

ABSTRACT: A variation of noise figure measurement at microwave frequencies is described which minimizes some of the usual difficulties, such as the need for high equipment stability during measurement and the problem of change in receiver gain caused by switching in of a noise source. A standard noise source, preferably a gas-discharge tube, and a standard reference signal generator are connected to the receiver in question via a directional coupler of at least 20-db directivity. The signal generator output is calibrated in accurate attenuation increments. Either AGC or a limiter-discriminator stage is added to the receiver, if not already built in, followed by a second detector, an LF amplifier and an output vacuum-tube voltmeter (VTVM). In operation, a reference signal is first applied to the receiver, giving a VTVM reading, then

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ACCESSION NR: AP3000196

the noise source is switched in, raising the output reading. The meter
reading is brought back to its initial level by raising the input reference
signal amplitude, which by increased AGC bias reduces the amount of noise
passed and maintains the output reference signal virtually constant. The
resulting difference in reference signal attenuation settings M is used to
calculate the noise figure F by the formula

$$F = Nu-1/M-1$$

in db, where Nu is the ratio of noise source temperature to standard
temperature. The accuracy of the method is determined by the resolution of
the attenuator settings. It is shown that the output of the second detector,
whether proportional to amplitude, phase, or frequency, is a direct function of
signal-to-noise ratio, and that errors due to impedance mismatch or equipment
instability are minimal. The method was verified experimentally using the
variation of limited and frequency discriminator. Orig. art. has: 11 formulas
and 3 figures.

Card 2/3

L 10510-63
ACCESSION NR: AP3000196

ASSOCIATION: none

SUBMITTED: 00   DATE ACQ: 12Jun63   ENCL: 00

SUB CODE: SD   NO REF SOV: 010   OTHER: 000

88/04
Card 3/3

SMIRNOV, Yu.I.; FAZLULLIN, M.I.

Approximate method of determining an efficient distance between
ventilation holes. Izv.vys.ucheb.zav.; geol.i razv. 5 no.3:123-
130 Mr '62.   (MIRA 15:4)

1. Kan-i-Mansurskaya geologorazvedochnaya ekspeditsiya.
            (Mine ventilation)   (Boring)

42910

S/547/62/000/146/003/004
A001/A101

/3.2200

AUTHORS: Kozhevnikov, N. P., Candidate of Technical Sciences, Smirnov, Yu.I.

TITLE: The accuracy of determining altitudes of photographing from
            readings of the РВТД (RVTD) radar-altimeter and its modernized
            model

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut geodezii,
            aeros'yemki i kartografii. Trudy. no. 146. 1962. Issledovaniya po
            fotogrammetrii,23 - 26

TEXT: The TsNIIHAiK investigated the accuracy of determining altitudes of
photographing from the data of aerial photosurveys of different years and differ-
ent regions (plain and mountainous). The accuracy was evaluated from the results
of convergence of differences in photographing altitudes obtained from the read-
ings of a radar-altimeter and photogrammetric measurements, using the Professor
M. D. Konshin known formula. The latter can be simplified, if inclination angles
are small and elevations are not very large. In this case, the rms error in de-
termining the altitude of photographing can be expressed as follows:

Card 1/3

The accuracy of determining altitudes of...   S/547/62/000/146/003/004
A001/A101

$$m_H = \sqrt{\frac{1}{2} m^2_\zeta - (\frac{H}{b} m_p)^2},$$

(2)

and at a small photographing altitude ($H \leqslant 1{,}000$ m) it can be reduced to the following formula:

$$m_H \approx \frac{m_\zeta}{\sqrt{2}}$$

(3)

Random errors are revealed by the adopted investigation method; systematic errors are taken account of, when necessary (in mountainous regions). The authors present the results of accuracy evaluation separately for plain-hilly and mountainous regions. For the former the average magnitude of m_H in determining photographing altitudes from reading of RVTD radar-altimeters amounts to ± 1.2 m; it rises to ± 1.5 m with increasing altitude of photographing up to $2{,}000 - 2{,}500$ m. Surveys in the Tian-Shan mountains were used to determine the accuracy of modernized

Card 1/3

FAYVILEVICH, G.A.; KOKORIN, G.A.; YAKOVLEVA, Ye.D.; SMIRNOV, Yu.I.

Using methods of color metallography for the analysis of certain
carbides and intermetallic compounds. Sbor. trud. TSNIICHM
no.24:284-300 '62.   (MIRA 15:6)
    (Alloys—Metallography) (Intermetallic compounds)

SMIRNOV, Yu.I. [deceased]

Calculation of the mathematical expectation of a quasi-
additive path function on a graph. Dokl. AN SSSR 153 no.6:
1265-1268 D '63.   (MIRA 17:1)

1. Predstavleno akademikom A.A. Dorodnitsynym.

L 17585-63   EWT(1)/EPF(n)-2/EWT(m)/BDS/ES(j)   AMD/AFFTC/ASD/SSD   Pu-4 AR/K/DM
ACCESSION NR: AP3005224   8/0089/63/015/002/0152/0155

AUTHORS: Kovalenko, V. K.; Kozlov, V. F.; Sivantsev, Yu. V.; Smirnov, Yu. I.

TITLE: Irradiation doses of the personnel of the nuclear power installation
aboard the nuclear icebreaker "Lenin"

SOURCE: Atomnaya energiya, v. 15, no. 2, 1963, 152-155

TOPIC TAGS: irradiation dosimetry, icebreaker "Lenin", Beta particle, thermal
neutron, fast neutron

ABSTRACT: Methods are described for individual dosimetry. The irradiation
doses of the personnel aboard the "Lenin" icebreaker received after three years
of service at the nuclear reactor are given. The average dose was 1.62 biologi-
cal rad. equivalent per year, which is more than three times less than permiss-
ible. It has been found that the contribution of thermal neutrons to the total
dose was small (average value 8%; maximum 18%). The irradiation by Beta particles
and fast neutrons is negligibly small. The general health of the nuclear personnel
was comparable with that of the rest of the crew. Orig. art. has: 1 figure,
1 formula.

Card 1/2

ACCESSION NR: AP3001105   S/0208/63/003/003/0539/0546

AUTHOR: Smirnov, Yu. I. (Moscow)

TITLE: Transformation of an operat r schema

SOURCE: Zhurnal vychislitol'noy matematiki i matematicheskoy fiziki, v. 3, no. 3, 1963, 539-546

TOPIC TAGS: operator scheme, oriented graph, prohibited path, prohibition matrix, interstitial value, initial data, input operator, output operator, Boolean matrix, graph history

ABSTRACT: The author constructs an equivalent transformation to an operator scheme described by an oriented graph in which certain paths are prohibited. The new scheme is described by an oriented graph with no prohibited paths. For the latter there is an algorithm leading to the construction of a matrix of exclusions for interstitial values. Orig. art. has: 3 formulas.

ASSOCIATION: none

SUBMITTED: 06Jan62

SUB CODE: MA
Card 1/1   NO REF SOV: 001

ENCL: 00
OTHER: 000

low-temperature metallurgy, with motion-picture photography.
Sbor. trud. TSNIIChM no.39:164...   14.

(LIRA IF:3

SOLOV'YEV, Yevgeniy Mikhaylovich; POGODIN, L.L., nauchnyy red.;
     SMIRNOV, Yu.I., red.; TSAL, R.K., tekhn.red.

     [Manual for engineers of commercial fishing boats] Posobie
     motoristu rybopromyslovogo sudna. Leningrad, Gos.soiuznoe
     izd-vo sudostroit.promyshl., 1960. 354 p.   (MIRA 13:11)
          (Marine engineering)   (Fishing boats)

POLONSKIY, Vladimir Ivanovich; KHAYKIN, Abram Borisovich; KUZNETSOV, N.A.,
      nauchnyy red.; SMIRNOV, Yu.I., red.; KONTOROVICH, A.I., tekhn.red.;
      KOROVENKO, Yu.N., tekhn.red.

[Diesel-electric motorships and prospects for expanding their
construction] Elektrokhody i perspektivy ikh razvitiia. Leningrad,
Gos.soiuznoe izd-vo sudostroit.promyshl., 1960. 499 p.
                                            (MIRA 14:3)

   (Marine diesel engines)   (Ship propulsion, Electric)

LAZAREV, Valentin Afanas'yevich; MANZHOS, Yu.A., inzh., retsenzent; KARPOV,
D.T., inzh., retsenzent; YEMEL'YANOV, Yu.V., nauchnyy red.; SMIRNOV,
Yu.I., red.; FRUMKIN, P.S., tekhn. red.

[Automobile engines in launch building] Avtomobil'nye dvigateli v
katerostroenii. Leningrad, Gos. soiuznoe izd-vo sudostroit.pro-
myshl. 1961. 258 p.   (MIRA 14:6)
          (Marine engines)   (Automobles--Engines)

NEBESNOV, Viktor Ivanovich; ARTOBOLEVSKIY, I.I., akademik, nauchnyy red.;
     NAYDENKO, O.K., kand. tekhn. nauk, retsenzent; BASIN, A.M., prof.,
     retsenzent; SMIRNOV, Yu.I., red.; TSAL, R.K., tekhn. red.

[Dynamics of the engine in the system composed of a ship's hull, the
propeller, and the engine] Dinamika dvigatelia v sisteme korpus sudan –
vinty – dvigateli. Leningrad, Gos. soiuznoe izd–vo sudostroit., pro–
myshl., 1961. 373 p.   (MIRA 14:11)
                    (Marine engines)

ROZANOV, Nikolay Petrovich; POPOV, V.F., doktor tekhn. nauk, prof.,
        retsenzent; KERSTEN, M.N., nauchnyy red.; SMIRNOV, Yu.I., red.;
        TSAL, R.K., tekhn. red.

        [Technology of manufacturing small propellers] Tekhnologiia izgo-
        tovleniia grebnykh vintov malykh razmerov. Leningrad, Sudpromgiz,
        1962. 167 p.   (MIRA 15:6)
                (Propellers)   (Marine engineering)

KURZON, Ananiy Grigor'yevich, doktor tekhn.nauk, prof.; LITAVRIN,
Oleg Grigor'yevich, inzh.; PETROV, Yevgeniy Valerianovich,
inzh.; POTYAYEV, Vyacheslav Andreyevich, kand. tekhn.nauk;
KHOMOZYANTS, Aleksandr Georgiyevich, kand. tekhn nauk;
CHERTKOV, Aleksandr L'vovich, Laureat Leninskoy premii;
YUTKEVICH, Rostislav Mikhaylovich, inzh.; MOISEYEV, A.A.,
doktor tekhn.nauk, prof., retsenzent; MASLOV, A.A., kand.
tekhn. nauk, dots., retsenzent; ZAYTSEV, Yu.I., kand. tekhn.
nauk, retsenzent; KOZHEVNIKOV, A.V., kand. tekhn.nauk,
retsenzent; GITEL'MAN, A.I., inzh., retsenzent; SMIRNOV,
Yu.I., red.; TSAL, R.K., tekhn. red.

[Marine steam and gas turbines]Sudovye parovye i gazovye tur-
biny. Pod red. A.G.Kurzona. Leningrad, Sudpromgiz.
Vol.2. [Systems and working principle of turbomachinery units]
Sistemy i ustroistva turboagregatov. 1962. 419 p.
(MIRA 15:11)

(Marine turbines)

KORSHUNOV, Lev Petrovich. Prinimal uchastiye SEVAST'YANOV, N.B.,
kand. tekhn. nauk, dots.; KARPOVICH, V.A., inzh., retsenzent;
YUDOVICH, B.S., kand. tekhn.nauk, retsenzent; POGODIN, L.L.,
nauchnyy red.; SMIRNOV, Yu.I., red.; CHISTYAKOVA, R.K., tekhn.
red.

[Power systems of fishing trawlers]Energeticheskie ustanovki
rybolovnykh traulerov. Leningrad, Sudpromgiz, 1963. 295 p.

(Fishing boats)   (MIRA 16:4)

KHURSHUDYAN, Genrikh Mkrtichevich; ZAYTSEV, I.A., inzh., retsenzent; SMIRNOV, M.V., inzh., retsenzent; GUR'YEV, V.P., prof., nauchnyy red.; SMIRNOV, Yu.I., red.; KOROVENKO, Yu.N., tekhn. red.

[Hydraulic torque converters] Gidravlicheskie preobrazovateli krutiashchego momenta. Leningrad, Sudpromgiz, 1963. 266 p.

(Torque) (Oil hydraulic machinery)   (MIRA 16:7)

AGAFONOV, Vladimir Andreyevich [deceased]; YERMILOV, Valentin
    Georgiyevich; PANKOV, Yevgeniy Vasil'yevich; VASIL'YEV,
    V.K., doktor tekhn. nauk, prof., retsenzent; KUTATELADZE,
    S.S., doktor tekhn. nauk, prof., retsenzent; SERDYUKOV, S.A.,
    nauchn. red.; SMIRNOV, Yu.I., red.; CHISTYAKOVA, R.K., tekhn.
    red.
    [Marine condenser plants] Sudovye kondensatsionnye ustanovki.
    Leningrad, Sudpromgiz, 1963. 489 p.   (MIRA 16:12)
       (Marine engineering) (Condensers (Stem))

KOZHEVNIKOV, N.P.; SMIRNOV, Yu.I.

Features of determining corrections to readings of a radio altimeter. Geod. i kart. no.3:26-32 Mr '63. (MIRA 16:7)

(Altimeter)   (Aerial photogrammetry)

KIZEL'SHTEYN, Vladimir Yakovlevich; KOSMACHEV, I.G., retsenzent;
SVERDIOL M.B., retsenzent; STEPANOV, Ye.V., nauchn. red.;
SMIRNOV, Yu.I., red.

[Chemical and mechanical methods of metal treatment] Khimiko-
mekhanicheskaia obrabotka metallov. Leningrad, "Sudostroenie,"
1964. 139 p.   (MIRA 17:4)

MARKOVICH, Vladislav Anatol'yevich. Prinimal uchastiye YEFREMOV, L.V., inzh.; BELIK, K.I., inzh., retsenzent; KATSMAN, F.M., retsenzent; IOGOLIN, L.L., nauchn. red.; SMIRNOV, Yu.I., red.

[Diesel engine plants with controllable pitch propellers] Dizel'nye ustanovki s vintami reguliruemogo shaga. Leningrad, "Sudostroenie," 1964. 203 p. (MIRA 17:8)

BOGATYKH, Semen Aleksandrovich; TARAT, E.Ya., kand. tekhn. nauk,
nauchn. red.; SMIRNOV, Yu.I., red.

[Complex air-conditioning in a foam equipment system]
Kompleksnaia obrabotka vozdukha v pennykh apparatakh. Le-
ningrad, "Sudostroenie," 1964. 315 p.   (MIRA 17:4)

KUDINOV, Nikolay Nikolayevich; AL'KIMOVICH, A.V., inzh.,
        retsenzent; VESHKEL'SKIY, S.A., retsenzent; BABIN,
        Yu.P., nauchn. red.; SMIRNOV, Yu.I., red.

        [Marine atomic power plants] Sudovye atomnye energetiche-
        skie ustanovki. Leningrad, Sudostroenie, 1964. 330 p.
                                                (MIRA 18:2)

DOROSHENKO, Pavel Aleksandrovich: GOLOMB, A.S., inzh., retsenzent;
    KHRYAPCHENKOV, A.S., kand. tekhn. nauk, retsenzent;
    KHRAVKIN, A.Ye., nauchn. red.; SHIRKOV, Yu.I., red.

[Manufacture of marine boilers and heat exchangers; materials
and technology] Proizvodstvo sudovykh kotlov i teploobmennykh
apparatov; materialy i tekhnologiia. Leningrad, Sudostroenie,
1964. 219 p.   (MIRA 18:3)

MIKLOS, Anatoliy Georgiyevich; VESHKEL'SKIY, S.A., inzh., retsenzent;
LABZIN, M.D., kand. tekhn. nauk, retsenzent; ALEKSANDROV,
A.D., nauchn. red.; SMIRNOV, Yu.I., red.

[Automatic control and control and measuring apparatus of
marine power plants] Avtomatika i kontrol'no-izmeritel'nye
pribory sudovykh silovykh ustanovok. Leningrad, Sudostroenie,
1965. 133 p.   (MIRA 18:8)

PUSHKIN, Nikita Ivanovich; BUZNIK, V.M., doktor tekhn. nauk,
        prof., retsenzent; GASANOV, G.A., dots., retsenzent;
        KUZNETSOV, N.M., nauchn. red.; SMIRNOV, Yu.I., red.

        [Marine steam boilers; theory and calculations] Sudovye
        parovye kotly; teoriia i raschety. Leningrad, Sudo-
        stroenie, 1965. 510 p.   (MIRA 18:7)

GROBMAN, D.M. (Moskva); SMIRNOV, Yu.I. (Moskva)

Economic distribution of loads over 24-hour period for electric power plants in mixed systems. Izv. AN SSSR. Otd.tekh.nauk. Energ. i avtom. no.4:49-58 Jl-Ag '59.   (MIRA 12:11)

1. Institut elektronnykh upravlyayushchikh mashin AN SSSR.
            (Electric power plants—Load)

8(5)   SOV/2o-127-3-18/71

AUTHORS: Grobman, D. M., Smirnov, Yu. I.

TITLE: Economical Load Distribution of a 24 Hours' Diagram for Power
                Plants of Combined Energy Systems

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, pp 545-548
                (USSR)

ABSTRACT: The following problem is discussed in the present paper: In
                a power system combined of thermal- and hydraulic power
                plants with a cascade-connected system of hydroelectric power
                plants the capacities are to be distributed in such a manner
                that each hydroelectric power plant uses a given quantity of
                water and the entire fuel consumption of all thermal power
                plants attains a minimum. The problem is solved by the suc-
                cessive improvement of the practical working methods. The
                method described makes use of real diagrams and takes the
                channel motion and loss in the mains into account. The prob-
                lem is solved in the following manner: The capacity in the
                individual intervals of time within the entire system P_{system}
                and at the individual plants P_n^l is assumed to be constant

                (n denotes the number of plants, l the consecutive number
                and L the number of periods of time) Δt ($\Delta t = \dfrac{24 \text{ hours}}{L}$) is

Card 1/3

Economical Load Distribution of a 24 Hours' Diagram for Power Plants of
Combined Energy Systems

to be so small that this constancy is warranted. The system
is intended to consist of N hydro- and R thermoelectric power
plants. The fuel consumption is now, in consideration of all
loss parameters of the system, set up as a function of the
cooperation of all plants , and for it the minimum is sought:

$$B = \sum_{r=N+1}^{N+R} \sum_{l=1}^{L} B_r^l(P_{\pi}^l) \, \Delta t.$$ Water consumption and energy con-

sumption (the latter being equal to the load of the system
and the loss) give the conditions (1) and (2) for the func-
tion B(P). In geometric interpretation this means that in
a (N+R)L-dimensional space of the variables P_1^1, P_1^2,
P_1^1, P_2^1, P_2^2, ... P_{N+R}^L the function B(P) is to have a minimum
supposed to be located on the sectional surface formed by
the surfaces from the conditions (1) and (2). On this sectional
surface the direction is now sought in which B tends towards
zero as quickly as possible. The problem is further solved
by successive approximation. In reality this means that,
since this way has proved to be possible, the working process

Card 2/3

Economical Load Distribution of a 24 Hours' Diagram for Power Plants of
Combined Energy Systems

SOV/2o-127-3-18/71

may be improved so long until, under the conditions (1) and
(2), the minimum for B is attained in a certain load
$P\{P_1 \ldots P^{N+R}\}$ The / theme of this report as well as the
successive improvement of the function of
fuel consumption was suggested by I.S. Bruk, Corresponding Mem-
ber, AS USSR. The authors thank I.S. Bruk and A.L. Brudno for
advice and likewise also V. S. Shakhanov and V. A. Skobelev.

ASSOCIATION: Institut elektronnykh upravlyayushchikh mashin Akademii nauk
SSSR (Institute for Electronic Control Machines of the
Academy of Sciences, USSR)

PRESENTED: April 1o, 1959, by A. A. Blagonravov, Academician

SUBMITTED: April 1o, 1959

Card 3/3

BAL'YANK Roblen Khorenovich; MEYERSON, I.G., kand. tekhn. nauk, retsenzent;
SMIRNOV, Yu.I., red. ; SHISHKOVA, L.M., tekhn. red.

[Low power transformers] Transformatory maloi moshchmosti. Lenin-
grad, Gos. soiuznoe izd-vo sudostroit. promyshl., 1961. 366 p.
(MIRA 14:10)

(Electric transformers)

VINOGRAD, M.I.; GROMOVA, G.P.; Prinimali uchastiye: LIKHNOVA, I.V.; SMIRNOV, Yu.I.; RASKOVA, A.F.; PROSHKINA, M.F.

Investigating inclusions in U10A steel with a varying degree of plasticity. Stal' 22 no.9:842-845 S '62.   (MIRA 15:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.
                              (Steel--Impurities)
                    (Metals at high temperature)

L 57807-65   EWA(h)/EWT(1)/EWG(m)   Peb
ACCESSION NR: AP5016759

UR/0286/65/000/010/0082/0082
681.142.644

AUTHOR: Smirnov, Yu. K.

TITLE: Logarithmic functional converter. Class 42, No. 171160

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 10, 1965, 82

TOPIC TAGS: logarithmic converter, functional converter, logarithmic functional converter

ABSTRACT: The proposed converter (Fig. 1 of the Enclosure) contains an amplifier which has an element with an exponential volt-ampere characteristic in its feed-back circuit. To broaden the dynamic range and reduce error, an avalanche diode whose positive terminal is connected to the summing point of the amplifier is used as the nonlinear element. The amplifier summing point is connected through input resistors to the bias- and input-voltage sources. The negative terminal of the diode is connected through a resistor to the amplifier output. The common point of the avalanche diode and of the feedback resistor serves as the converter output. Orig. art. has: 1 figure.   [DW]

Card 1/3

L 57807-65

ACCESSION NR: AP5016759

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut im. V. I. Ul'yanova
(Lenina) (Leningrad Institute of Electrical Engineering)

SUBMITTED: 11Jul64   ENCL: 01   SUB CODE: EC

NO REF SOV: 000   OTHER: 000   ATD PRESS: 4036

Card 2/3

L 57807-65
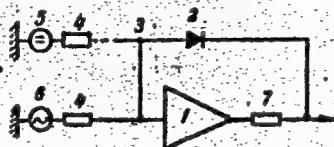ACCESSION NR: AP5016759   ENCLOSURE: 01

Fig. 1. Logarithmic functional
converter

1 - Amplifier; 2 - avalanche
diode; 3 - amplifier summing
point; 4 - input resistors;
5 - bias-voltage source;
6 - input-voltage source;
7 - feedback resistor.

Card 3/3

L 30385-66   EWT(m)/T   IJP(c)   DJ

ACC NR: AP6008003 (N) SOURCE CODE UR/0046/66/012/001/0125/0127

69
68
B

AUTHOR: Smirnov, Yu. K.

ORG: Leningrad Electrotechnical Institute im. V. I. Ul'yanov (Lenin) (Leningradskiy elektrotekhnicheskiy institut)

TITLE: The calculation of the interaction of viscosity pickups with liquid

SOURCE: Akusticheskiy zhurnal, v. 12, no. 1, 1966, 125-127

TOPIC TAGS: viscosimeter, fluid viscosity, viscous flow, ELASTICITY, INTERNAL FRICTION, FLUID DENSITY

ABSTRACT: The author investigates, without taking boundary effects into account, a uni-dimensional problem for a plate submerged in a liquid and oscillating in its plane. The equation of oscillations appears as:

$$m\ddot{x} + \beta_0 \dot{x} + kx + 2S\sqrt{\mu\rho/\pi} \int_0^t [\ddot{x}(\tau)/\sqrt{t-\tau}] \, d\tau = F(t),$$

where m is the overall mass of the oscillating system, x = x(t) is the coordinate of the center of gravity of the plate, β_0 is the internal friction coefficient, k is the elasticity coefficient, S is the area of one side of the plate, μ and ρ are viscosity and density of the liquid, respectively, and F(t) is the external force. A solution is obtained and compared with the known solution by A. I. Pridantsev, A. V. Romashevskiy, and A. N. Solov'yev (Ob odnom metode nepreryvnogo izmereniya vyazkosti. Zho prikl. mekh. i tekhn. fiz., 1961, 1, 128-132).

UDC 534.6:532.13

Card   1/2

SMIRNOV, Yu. K.

"Disruption of Porphrin Metabolism During Disease of the Nervous System." Cand Med Sci, Central Inst for the Advanced Training of Physicians, Min Health USSR, Moscow, 1955. (KL, No 12, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

SMIRNOV, Yo. K.

USSR/Medicine - Physiology

Card 1/1   Pub. 22 - 50/50

Authors   : Grashchenkov, N. I., Memb. Corresp. A:ad. of Sc., USSR.; Blyumenfeld, L. A.,
              Drasovitskaya, S. E.; Perel'man, L. B.; and Smirnov, Yu. K.

Title   : Oxygen consumption by tissues and functional state of hemoglobin during
              myasthenia

Periodical : Dok. AN SSSR 100/1, 191-192, Jun. 1, 1955

Abstract   : An investigation was conducted to determine the effect of oxygen require-
              ment of tissues on the functional state of hemoglobin during myasthenia.
              A thorough diagnosis of five myasthenic patients showed that hemoglobin
              plays a very important role in the regulation of the respiratory functions
              of the blood. It was established that myasthenia disturbs the trophic
              functions of the tissues which is expressed by reduced intensity of
              tissue respiration. Five USSR references (1946-1953). Table.

Institution :   . . . .

Presented by: July 14, 1954

GELLER, D.S. [deceased]., SMIRNOV, Yu.K.

Determining protein fractions of the cerebrospinal fluid by paper
electrophoresis. Lab.delo 6 [i.e.4] no.4:31-35 Jl-Ag '58 (MIRA 11:9)

1. Iz nauchnoy gruppy deystvitel'nogo chlena AMN SSSR prof. N.I.
Grashchenkova pri AMN SSSR i laboratorii (zav. - prof. Ye.A. Kost)
Klinicheskoy ordena Lenina bol'nitsy imeni S.P. Botkina, Moskva.
            (CEREBROSPINAL FLUID--ANALYSIS)
            (PAPER ELECTROPHORESIS)

SMIRNOV, Yu.K.

Dialyzer for concentrating protein of cerebrospinal fluid.
Lab.delo 6 [i.e.4] no.4:54-55 Jl-Ag '58
(MIRA 11:9)

1. Iz nauchnoy gruppy deystvitel'nogo chlena AMN SSSR prof.
N.I. Grashchenkova pri AMN SSSR.
(CEREBROSPINAL FLUID)
(DIALYSIS--EQUIPMENT AND SUPPLIES)

EXCERPTA MEDICA Sec 8 Vol 12/9 Neurology Sept 59

4205. BLOOD SERUM PROTEIN FRACTIONS IN CERTAIN DISORDERS OF THE
DIENCEPHALIC REGION (Russian text) - Smirnov Yu. K. - ZH. NEVRO-
PAT. I PSIKHIAT. 1958, 58/4 (427-431) Illus. 3

The blood serum protein fractions were studied with the help of paper electrophor-
esis. Twenty-six patients with involvement of the diencephalic region, 10 with myo-
tonia, 18 with myasthenia and 9 healthy individuals were investigated. In the pre-
sence of diencephalic pathology, increased α_2-globulin and γ-globulin fractions,
and a decreased β-globulin fraction were established. In a number of cases, when
the condition improved the protein fractions became more normal. In myasthenic
inversion, an increase in the γ-globulin fraction and a decrease in the α_1-globulin
fraction were noted. The injection of proserine in these cases led to a decrease in
the γ-globulin fraction. In myotonia, an increase in the α_2-globulin was noted.
References 18.   Golland - Moscow

GISEV, M.I., dotsent; SMIRNOV, Yu.K., kand.med.nauk

Spectrophotometric determination of coproporphyrin excreted with the urine. Pred. dop. kontsent. atmosf. zagr. no. 4:139-142 '60.
(MIRA 13:10)

1. Iz kafedry gigiyeny Ryazanskogo meditsinskogo instituta, kafedry kommunal'noy gigiyeny i kafedry nervnykh bolezney TSentral'nogo instituta usovershenstvovaniya vrachey.
(SPECTROPHOTOMETRY) (COPROPORPHYRIN)
(URINE—ANALYSIS AND PATHOLOGY)

Combination of xanthoma with tuberculosis and malignant exophthalmos. Clin. med., Moskva, 1954, 32: 62.

(MIRA 15:6)

1. Gruppa deystvitel'nogo chlena AMN SSSR N. I. Grashchenkova pri Akademii meditsinskikh nauk SSSR, klinika nervnykh bol'ney ... ... i psikhologicheskogo otdela ... ...

(EXOPHTHALMOS)

PEREL'MAN, L.B.; SHTUL'MAN, D.R.; KOLOMENSKAYA, Ye.A.; SMIRNOV, Yu.K.;
        FISHMAN, M.N. (Moskva)

Ocular form of myasthenia gravis. Klin. med. 41 no.6:127-
135 Je '63.   (MIRA 17:1)

1. Iz laboratorii klinicheskoy neyrofiziologii (rukovoditel' -
prof. N.I. Grashchenkov) AMN SSSR i kliniki nervnykh bolezney
(dir. V.V. Mikheyev) I Moskovskogo meditsinskogo instituta
imeni I.M. Sechenova.

SMIRNOV, Yu.M.

Suspended electric drill for the Bleichert truck-mounted crane.
Biul. tekh.-ekon. inform. no.1:79-80 '57.   (MIRA 11:4)
(Boring machinery)

SMIRNOV, A.M.

28(2)   PHASE I BOOK EXPLOITATION   SOV/3254

Moscow. Vyssheye tekhnicheskoye uchilishche imeni Baumana.

Schetno-reshayushchiye pribory (Computers) Moscow, Mashgiz, 1959.
    84 p. (Series: Its: Sbornik trudov, vyp. 82) 6,000 copies
    printed.

Ed.: S. O. Dobrogurskiy, Doctor of Technical Sciences, Professor;
    Ed. of Publishing House: A. L. Tairova; Tech. Ed.: A. F. Uvarova;
    Managing Ed. for Literature on Machine Building and Instrument
    Making (Mashgiz): N. V. Pokrovskiy, Engineer

PURPOSE: This collection of articles is intended for engineers,
    scientific personnel and students working in the field of com-
    puters.

COVERAGE: This is a collection of articles compiled by the depart-
    ment of computers at MVTU and devoted to analysis of computer
    components: diode circuits which perform mathematical operations;
    drive circuits with a servomotor in the form of a powder magnetic

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SOV/3254

Computers (Cont.)

    clutch, with a mushroom-shape friction clutch and with a friction
    clutch of the Svetozarov system; investigation of a pulse
    tracking system and of the drifts occurring in a single-shaft
    gyrostabilizer. No personalities are mentioned. There are no
    references.

TABLE OF CONTENTS:

Kazakov, V. A. Candidate of Technical Sciences. Function Generators
Using Diodes   3
    The author states that vacuum-tube or semiconductor
    diodes may be used in function generator circuits, for
    which case errors may be as high as 1 to 3 percent, or as
    low as one-tenth of a percent. When selenium or copper
    oxide rectifiers are used as diodes, errors will greatly
    increase. The author emphasizes the advantages of diode-
    equipped function generators over electromechanical ones
    (potentiometers, rotatable transformers, etc.). These advan-
    tages consist primarily in the absence of mechanical parts

Card 2/6

Computers (Cont.)

SOV/3254

and, consequently, in low inertia. The author presents several schematic diagrams of various types of function generators and derives their equations according to functions of these generators (reproduction of a parabola, sine and cosine functions, multiplication of two independent variables, etc.). The author concludes that errors occurring in the operation of diode function generators are mostly errors of method and instrument errors.

Chetverikov, V. N. Candidate of Technical Sciences. Tracking Drives With Powder Magnetic Clutches   22
The author investigates the possibilities of developing drives with position control or with the rate of change of position or with both methods combined. A powder magnetic clutch was used as the actuating element. As setting elements, a potentiometer and a tachogenerator were used. From these a voltage proportional to the angle and speed of rotation of the flywheel is delivered as the input signal, from which a corresponding clutch velocity is

Card 3/6

Computers (Cont.)

SOV/3254

utilizing the superposition principle, the author finds optimum values of system parameters by comparing results obtained from the investigation of the three most characteristic features of the operation of tracking systems under pulse conditions. These features are: 1) effect of the initial error of the indicator device on the stability and quality of the tracking system. 2) distortion of the coordinate incoming on the system input by tracking errors and the determination of the accuracy of continuous adjustment of this coordinate. 3) effect of acceleration in the rate of change of the input coordinate on the value of the systematic error of adjustment. The results of investigation of these three cases permit making recommendations as to the selection of optimum values of the basic system parameters and particularly, of the optimum value of the time constant of the drive. This, in turn, permits calculating the function generator of the system according to the pulse sequence periods, which change within wide limits.

Card 5/6

S/196/61/000/011/034/042
E194/E155

AUTHORS: Neyshtut, S.M., and Smirnov, Yu.M.

TITLE: Distribution equipment of a chemical plant

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika,
             no.11, 1961, 4, abstract 11K 23. (Elektr. stantsii,
             no.4, 1961, 44-49)

TEXT: Chemical manufacture is characterised by splashing
and gas evolution which corrodes the metal parts and impairs
the insulation of electrical equipment. A widely-used but
ineffectual counter-measure is to locate 35 - 110 kV
distribution equipment in rooms which are closed but not
hermetically sealed. In this connection it is recommended to
make extensive use of open-type distribution equipment. It is
recommended that joints should be protected by painting them
with red lead in natural-drying oil. One essential measure
should be to use pre-assembled reinforced concrete for portals
and other structural features of open-type distribution
equipment. Designs of closed distribution equipment for

Card 1/2

Distribution equipment of a ...   S/196/61/000/011/034/042
                                        E194/E155

particularly corrosive media should provide for special
building construction and forced ventilation with air-purifying
equipment. For heat and electric power stations the main
distribution equipment (6 - 10 kV and short-circuit current
of 300 kA) should be standardised in order to reduce the
demands on material and labour. Plants of the electrical
industry must develop high-voltage equipment suitable for use
in a corrosive atmosphere.

[Abstractor's note: Complete translation.]

Card 2/2

S/588/61/000/004/010/011
D234/D303

9.7140

AUTHORS: Smirnov, Yu.M., and Medvedev, V.I.

TITLE: Stabilizing the velocity of rotation of magnetic recording disc of a storage device

SOURCE: Avtomaticheskoye upravleniye i vychislitel'naya tekhnika, no. 4, Moscow 1961, 339 - 354

TEXT: The authors describe an electric motor with highly stable instantaneous velocity of rotation and discuss several factors which, in their opinion, are decisive from the point of view of stability. The admissible values of deviations of the parameters and characteristics were determined from the condition that the stability of rotation should be obtained with an accuracy up to 10^{-5}. The effect of fluctuations of the supply voltage, of the displacement of the center of gravity of rotating parts with respect to the axis of rotation, of an eccentric position of the rotor with respect to the stator are studied in detail. In the last chapter a description is given of the methods of experimental measurements of

Card 1/2

V/B

SMIRNOV, YU. M.

Kolmogorov, A. N., Petrov, A. A., and Smirnov, Yu. M.
A formula of Gauss in the theory of the method of least
squares. Izvestiya Akad. Nauk. SSSR. Ser. Mat. 11,
561–566 (1947). (Russian)

In articles 39–40 of Gauss's Theoria Combinationis Ob-
servationum Erroribus Minimis Obnoxiae there occurs the
inequality $\rho\rho/\pi \leqq \sum (a\alpha+b\beta+c\gamma+\cdots)^2 < \pi$. Gauss failed to
notice that this inequality can be sharpened. The purpose
of the paper is to show that $\rho\rho/\pi \leqq \sum(a\alpha+b\beta+c\gamma+\cdots)^2 \leqq \rho$
and that this latter inequality cannot be improved.

W. E. Milne (Corvallis, Ore.).

Source: Mathematical Reviews,   Vol 9   No. 7

SMIRNOV, Yu.

Smirnov, Yu. On a class of topological spaces. Doklady. Akad. Nauk SSSR (N.S.) 59, 1253-1256 (1948). (Russian)

Alexandroff and Urysohn [Verh. Nederl. Akad. Wetensch. Afd. Natuurk. Sect. 1, 14, no. 1 (1929)] called a topological space R (a, b)-compact if it satisfies the condition denoted in this paper by A: every subset M of R, of regular cardinal power m, $a \leq m \leq b$, has a point of "full accumulation"; they defined other properties now well-known, equivalent to this one. The author generalizes these concepts by replacing the condition of regularity by a-regularity defined as follows: a cardinal m is a-regular if m cannot be represented as the sum of fewer than a cardinals each of them smaller than m. In some theorems the upper bound b is immaterial; this is indicated in definitions by the device of substituting for b the symbol ∞. There is introduced, among a number of other notions, the concept of an a-centered system. This is a system of sets such that every subcollection containing fewer than a sets has a nonvacuous intersection. The author states a variety of theorems, generally without proof. The first of these is concerned with the equivalence relations which hold between the space properties introduced in this paper; another derives a sufficient condition that a regular space be normal; there is a theorem on local (a, b)-compactness and several theorems dealing with the notion of hereditarily (a, b)-compact spaces. In some of these b is particularized, e.g., $b = \omega$, or $b = \infty$.

L. Zippin.

Vol   No.

Smirnov, Yu.

Smirnov, Yu. On the theory of completely regular spaces. Doklady Akad. Nauk SSSR (N.S.) 62, 749–752 (1948). (Russian)

Let R be a T_1-space. A system Σ of pairs $(\phi, O\phi)$, ϕ closed, $O\phi \supset \phi$ open, is called dense if, for any $(\phi, O\phi)\epsilon\Sigma$, there is a neighborhood $O'\phi$ of ϕ such that $O\phi \supset [O'\phi]$, where $[O'\phi]$ denotes the closure of $O'\phi$, and $([O'\phi], O\phi)\epsilon\Sigma$. The maximal dense system is called the system of regularity of R. The author states the following theorems. (1) Disjoint closed sets ϕ_0, ϕ_1 are functionally separated (i.e., $f(\phi_0)=0$, $f(\phi_1)=1$ for some continuous real function f over R) if, and only if, $(\phi_0, R-\phi_1)$ is contained in the system of regularity of R. (2) A nonconstant continuous real function over R exists if, and only if, the system of regularity contains some $(\phi, O\phi)$, ϕ nonvoid, $O\phi \neq R$. Then the author considers extensions of continuous real functions and proves that a continuous real function f defined over a closed $\phi \subset R$ may be extended to a continuous real function over R different from 0 at every point $x\epsilon R-F$ if, and only if, the set $f^{-1}(O)$ is a G_δ in R. Finally, the author gives a method [cf. A. Tychonoff, Math. Ann. 102, 544–561 (1929)] for constructing completely regular nonnormal spaces without using ordinal numbers.   *M. Katětov* (Prague).

Source: Mathematical Reviews,   Vol 10 No. 5

KLICHKOV, M.

3015°. O sistemakh pokrytiy topologicheskikh prostranstv. Doklady Akad. Nauk S.SR. Novaya Seriya. t. LXIV, No. 5, 1949, s. 611-13.

SO: Letopis' Zhurnal'nykh Statey, Vol. 7, 1949.

Smirnov, Yu. M.

Smirnov, Yu. M. On irreducible cyclic bicompacta.
Uspehi Matem. Nauk (N.S.) 5, no. 6(40), 157–158 (1950).
(Russian)

This note contains a proof of the following generalization
to bicompact spaces of a classical theorem: Every n-dimen-
sional irreducible cyclic bicompactum is a Cantorian mani-
fold. Another formulation, explicit in the proof, is as follows:
Let F be an n-dimensional bicompact space which can be
expressed as the sum of two closed subsets F and F', such
that the intersection $F \cap F'$ is at most $(n-2)$-dimensional.
Then no mapping of F into the sphere S^n can be essential.
A principal idea in the proof is credited to Hurewicz and
Wallman [Dimension Theory, Princeton Univ. Press, 1941;
these Rev. 3, 312; the reference is to a Russian translation].

L. Zippin (Flushing, N. Y.).

Source: Mathematical Reviews,   Vol 12 No. 9.

SMIRNOV, Yu. M.

Vol 11 No. 9

Smirnov, Yu. M. On topological spaces compact in a given interval of power. Izvestiya Akad. Nauk SSSR. Ser. Mat. 14, 155–176 (1950). (Russian)

Let a and b be any infinite cardinal numbers, and let a be not greater than b. A topological space R is said to be $[a, b]$-compact if (1) for every regular cardinal number m such that $a \le m \le b$, every subset M of R of cardinal number m admits a complete limit point ξ (i.e., a point ξ such that every neighborhood of ξ intersects M in a set of cardinal number equal to the cardinal number of M). This notion was introduced by Alexandroff and Urysohn [see Verh. Akad. Wetensch. (Amsterdam) Afd. Natuurk. Sect. 1, 14, no. 1 (1929)]. In the present paper this definition and its ramifications are thoroughly explored. It is proved first that $[a, b]$-compactness is equivalent to each of the following properties: (2) in R, every family of nonvoid closed sets $F_1 \supset F_2 \supset \cdots \supset F_\xi \supset \cdots$ $(\alpha < \theta)$, well-ordered by set-inclusion and having a regular ordinal number θ such that $\omega(a) \le \theta \le \omega(b)$ has nonvoid intersection; (3) every family of closed subsets of R satisfying the conditions of (2), and with the additional property that every subfamily of cardinal number $< a$ has nonvoid intersection, has total intersection; (4) every open covering of R having a regular cardinal number m such that $a \le m \le b$ admits a subcovering of cardinal number less than a. No fewer than eight variations on these four properties are defined and discussed. Locally $[a, b]$-compact spaces are defined in the usual way; it is shown that an arbitrary locally $[a, b]$-compact space R can be imbedded in a $[a, b]$-compact Hausdorff space R by the adjunction of a single point; and that among all such extensions of R, the usual extension, where neighborhoods of ξ are complements of closed $[a, b]$-compact subsets of R, possesses the strongest possible topology. A topological space R is said to be hereditarily $[a, b]$-compact if all of its subsets are $[a, b]$-compact. The equivalence of the following properties of a topological space R is proved: (5) R is hereditarily $[a, b]$-compact, the cardinal interval $[a, b]$ containing at least one regular cardinal number; (6) R is hereditarily $[a, c]$-compact for all $c \ge a$; (3) every family of closed subsets of R, $F_1 \supset F_2 \supset \cdots \supset F_\xi \supset \cdots$ $(\alpha < \theta)$, well-ordered by set-inclusion and with regular ordinal number θ, contains a set F_α such that $F_\alpha = F_\beta$ for all $\alpha, \beta > \alpha$. Some simple analogues of the Cantor-Bendixson theorem are proved. The paper closes with the result that every topological space which is hereditarily $[\aleph_{\alpha+1}, b]$-compact for some $b \ge \aleph_{\alpha+1}$ has cardinal number not greater than $2^{\aleph_\alpha}$.

E. Hewitt.

S I , D. I.

"... ... ... Plo lems of Topolog." ... ...
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Lomono ...

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m: St. c. , ...

Smirnov, Yu. M.

Smirnov, Yu. M. On the theory of finally compact spaces.
Ukrain. Mat. Zurnal 3, 52–60 (1951). (Russian)
All topological spaces considered here are Hausdorff
spaces. For an infinite, regular cardinal number a, let $\omega(a)$
be the least ordinal number with cardinal number a. A
topological space X is said to satisfy condition S_a (S_a') if
every decreasing (increasing) transfinite sequence of closed
subsets of X, $\{F_\alpha\}_{\alpha < \omega(a)}$, is stationary (i. e., constant from
some point onward). The author is concerned with relations
existing among the conditions S_a, S_a', and compactness in
the interval $[a, \infty]$. [See Smirnov, Izvestiya Akad. Nauk
SSSR. Ser. Mat. 14, 155–178 (1950); these Rev. 11, 675.]
It will be recalled that $[a, \infty]$-compactness means com-
pactness in the interval $[a, b]$ for all $b \geq a$, and that an
equivalent condition is that every open covering of X admit
a subcovering of cardinal number $< a$. The terms "finally
compact" and "$[\aleph_1, \infty]$-compact" are synonymous, as are
"finally a-compact" and "$[a, \infty]$-compact". Final compact-
ness is the Lindelöf condition referred to by U. S. authors.
The author has previously proved [loc. cit., Ch. 2, Th. 2''])
that condition S_a is equivalent to hereditary $[a, \infty]$-
compactness. The following theorems are proved here. 1. A

topological space X satisfies condition S_a' if and only if every subset M of X contains a dense subset of cardinal number $< a$. 2. If X is a locally compact space satisfying both conditions S_a and S_a', then every monotone transfinite sequence $\{B_\sigma\}_{\sigma < \sigma_1}$ of sets B_σ which are simultaneously F_σ's and G_δ's is stationary. 3. The Cartesian product of an $[a, b]$-compact space and a (bi-) compact space is $[a, b]$-compact. (Here a need not be regular.) 4. The Cartesian product of a space satisfying condition S_a (S_a') and a space having an open basis of cardinal number $< a$ again satisfies condition S_a (S_a'). 5. Let Q be the real numbers, topologized so that a generic neighborhood of $x \in Q$ is the set $E[y; y \in Q, x \leq y < x + \delta]$, for all $\delta > 0$. Then Q is hereditarily $[\aleph_1, \infty]$-compact, satisfies conditions $S_{\aleph_1}$ and $S'_{\aleph_1}$, and has the property that $Q \times Q$ is not $[\aleph_1, \infty]$-compact and does not satisfy either condition $S_{\aleph_1}$ or $S'_{\aleph_1}$. The equivalence of conditions $S_{\aleph_1}$ and $S'_{\aleph_1}$ is considered. It is shown that these two conditions are equivalent for ordered topological spaces if and only if the Suslin problem has an affirmative solution; and thus the question is both left unanswered and regarded as very difficult.

E. Hewitt (Seattle, Wash.).

SMIRNOV, Yu M.

Smirnov, Yu. M. On a problem connected with the metrizability of topological spaces. Ukrain. Mat. Žurnal 3, 161–163 (1951). (Russian)

Let X be a locally countably compact Hausdorff space which is the union of countably many subspaces A_n, where each A_n is a G_δ in X and in its relative topology has a countable open basis. Then X is metrizable. The same is true if X is regular and the A_n's are all absolute G_δ's. As a corollary, a problem posed by Aleksandrov and Uryson [Verh. Nederl. Akad. Wetensch. Afd. Natuurk. Sect. 1 14, no. 1 (1929); also P. S. Uryson, Works on topology . . . , vol. II, Gostehizdat, Moscow-Leningrad, 1951, pp. 848–963; these Rev. 14, 122], as follows. Let R be a compact Hausdorff space and let Φ be the closed subset of R consisting of those points which have no metrizable neighborhood. Then, if R is non-metrizable and Φ is metrizable, $R \cap \Phi'$ is non-metrizable.   E. Hewitt (Seattle, Wash.).

SMIRNOV, Yu. M.

"Systems of Open Sets in Topological Spaces," Usp. Mat. Nauk Vol. 6 No. 4 (44), pp 193-220, 1951.

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SMIRNOV, Yu. M.

USSR/Mathematics - Topological Spaces   Nov/Dec 51

"Metrization of Topological Spaces," Yu. M. Smirnov

"Uspekh Matemat Nauk" Vol VI, No 6 (46), pp 100-111

Subject problem is to find the necessary and sufficient conditions that topological space be metricizable (homeomorphic to a certain metric space). It has always been considered as one of the basic and most important problems

196T75

USSR/Mathematics - Topological Spaces (Contd)   Nov/Dec 51

in connection with the principles of the so-called general or abstract topology. Enlarges the classical work of P. Uryson.

196T75

SMIRNOV, Yu. M.

Smirnov, Yu. M. Some relations in the theory of dimension. Mat. Sbornik N.S. 29(71), 157–172 (1951). (Russian)

Let R be a topological space. Let dim R be the dimension of R defined in terms of open coverings. Let ind R be the dimension of R defined in the usual inductive fashion [see, for example, Hurewicz and Wallman, Dimension Theory, Princeton Univ. Press, 1941; these Rev. 3, 312]. Let Ind R be the dimension of R, again defined inductively, but where arbitrary closed sets F and arbitrary open sets containing F replace the points and open neighborhoods which occur in the definition of ind R. It is known that dim $R = $ ind $R = $ Ind R for R separable and metric [Hurewicz and Wallman, op. cit.]; that dim $R \leqq $ ind R for R a bicompact Hausdorff space [P. Aleksandrov, Soobščeniya Akad. Nauk Gruzinskoĭ SSR 2, 1–6 (1941); these Rev. 3, 58]; that dim $R \leqq $ Ind R for R normal [Vedenisov, Izvestiya Akad. Nauk SSSR. Ser. Mat. 5, 211–216 (1941); these Rev. 3, 58]; that there exists a bicompact Hausdorff space T for which dim $T = 1$, ind $T = 2$ [Lunc, Doklady Akad. Nauk SSSR (N.S.) 66, 801–803 (1949); these Rev. 11, 46]. The present paper is concerned with extending these inequalities, where possible, and with other dimension-theoretic problems. The following theorems are proved. (I) Let R be a normal space for which every open covering admits a countable subcovering. Then dim $R = $ ind R. (?) There exists a ... S for which ind $S < $ Ind S. This space is a minor modification of Lunc's example [loc. cit.]. (III) Let βR denote the Čech-Stone bicompactification of the (completely regular) space R. Let $R \setminus$? a space with the property that every subspace of R is normal in its relative topology. Then ind $\beta R = $ ind R, Ind $\beta R = $ Ind βS. (IV) For the space S referred to in (II), ind $S < $ Ind βS. (V) Let R be a normal space such that for every subspace U of R, every open covering of U admits a countable sub-covering. Then ind $\beta R = $ Ind $R = $ ind βR. (VI) Let R be a space such that every subspace of R is normal in its relative topology. Then for arbitrary subsets M and N of R, the inequality $\delta(M \cup N) \leqq \delta(M) + \delta(N) + 1$ obtains, where δ is any of the functions ind, Ind, dim.

E. Hewitt

Source: Mathematical Reviews, Vol 13 No. 4

SMIRNOV, Yu. M.

Smirnov, Yu. M. On normally disposed sets of normal spaces. Mat. Sbornik N.S. 29(71), 173–176 (1951). (Russian)

Let R be a completely regular topological space. A subset M of R is said to be normally imbedded in R if for every open set G such that $M \subset G \subset R$, there exists a set H of type F_σ such that $M \subset H \subset G$. The principal results proved are as follows. Every set normally imbedded in a normal space is normal in its relative topology. Let a topological space be called finally compact if every open covering of that space admits a countable subcovering. If a completely regular space is finally compact, then it is normally imbedded in every completely regular space containing it. A completely regular space R is finally compact if and only if it is normally imbedded in βR. If R is completely regular and if M is normally imbedded in R, then $\dim M \leqq \dim R$ (dim denotes the dimension defined by finite open coverings). If R_1 and R_2 are regular spaces and if $R_1 \times R_2$ is finally compact, then R_1, R_2, and $R_1 \times R_2$ are normal and $\dim(R_1 \times R_2) \leqq \dim R_1 + \dim R_2$.   E. Hewitt (Uppsala).

Source: Mathematical Reviews,   Vol   13 No. 4

SMIRNOV, YU.

Smirnov, Yu. The Betti groups of the intersection of an infinite number of sets. Doklady Akad. Nauk SSSR (N.S.) 76, 29–32 (1951). (Russian)

The author sketches a proof (involving three subsidiary theorems) of the two following results. The intended application of these theorems is to a proof of the classical duality relations for general subsets of spherical n-space, or compact sets in euclidean n-space. Theorem 1: Let R be an arbitrary topological space and let ϕ_λ be a system of bicompacta ordered by inclusion. The Betti groups $\Delta^p \phi_\lambda$ taken with the homomorphisms of inclusion E_λ^μ generate an inverse spectrum whose limit group is the group $\Delta^p \phi$ of the intersection ϕ of the sets ϕ_λ. Theorem 2: Suppose that in a hereditarily normal space R there is given a set M. The Betti groups $\delta^p U_\lambda$ of neighborhoods U_λ of the set M taken with the homomorphisms of inclusion E_λ^μ generate an inverse spectrum whose limit group is the group $\delta^p M$. The groups Δ^p are based on finite coverings, and are taken with discrete or bicompact coefficients; the groups δ^p are groups of finite chains based on countable locally finite coverings, taken with discrete coefficients only.   L. Zippin (Brooklyn, N. Y.).

Source: Mathematical Reviews.   Vol. 13   No. 3

Smirnoy, Yu.

Smirnov, Yu. A necessary and sufficient condition for
metrizability of a topological space. Doklad r Akad.
Nauk SSSR (N.S.) 77, 197–200 (1951). (Russian)
The following condition, much simpler than the condi-
tions of P. S. Alexandroff and P. Urysohn [C. R. Acad. Sci.
Paris 177, 1274–1276 (1923)], E. W. Chittenden [Bull.
Amer. Math. Soc. 33, 13–34 (1927)], and J. W. Tukey
[Convergence and Uniformity in Topology, Princeton Uni-
versity Press, 1940; these Rev. 2, 67], is necessary and
sufficient for a regular space to be metrizable: There exists
a countable collection of locally finite open coverings making
up an open basis together. There are two additional results
concerning metrizability. — *M. Katětov* (Prague).

SMIRNOV, Yu. M.

Smirnov, Yu. M. Remark on the work, "On a problem connected with the metrizability of topological spaces." Ukrain. Mat. Ž. 4 (1952), 220–223. (Russian) Theorem: Let R be a countably compact Hausdorff space that is the union of 2 complementary closed sets, each of which has a countable basis. Then R has a countable basis. The proof given is a correction of an earlier one [Ukrain. Mat. Ž. (1951), 161–163; MR 14, 893].
E. Hewitt (Seattle, Wash.)

SMIRNOV, YU. M.

Functions

Weight of a ring of bounded continuous functions over normal space. Mat. sbor.,
30(72) , No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952 UNCLASSIFIED